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(54) **Chain saw protective leggings, trousers and jackets**

(57) Chain saw protective leggings and the like incorporating a mass of continuous filamentary fabric material (10) designed to "strand" when contacted by a moving chain saw blade, so as to clog and stop its rotation.

To facilitate bending of the legs or arms in a pair of leggings, trousers or a jacket folds or darts (16) are provided in the fabric material (10) to produce an area of fullness between them whilst retaining the continuity of the longitudinal strands of fabric throughout the full width of the material.

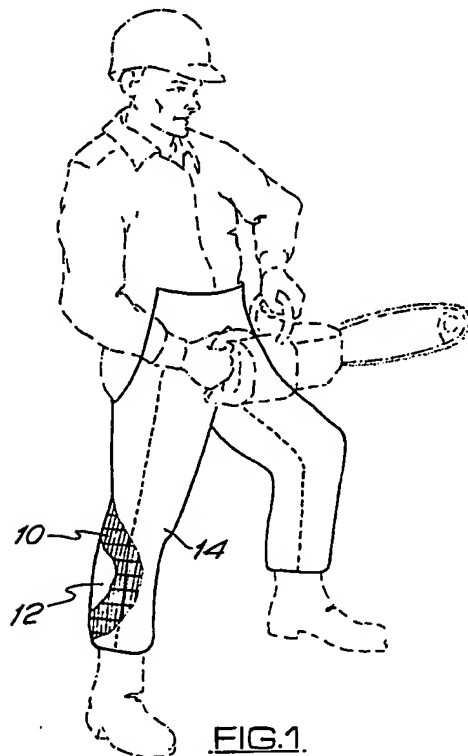


FIG.1.

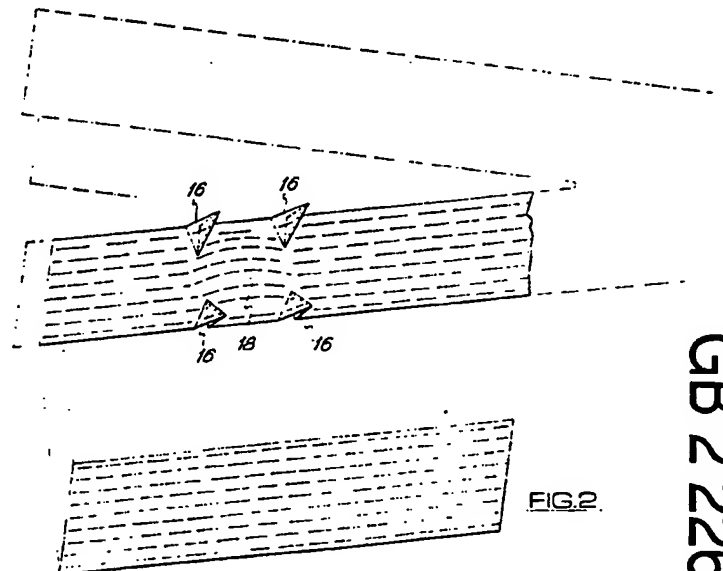


FIG.2.

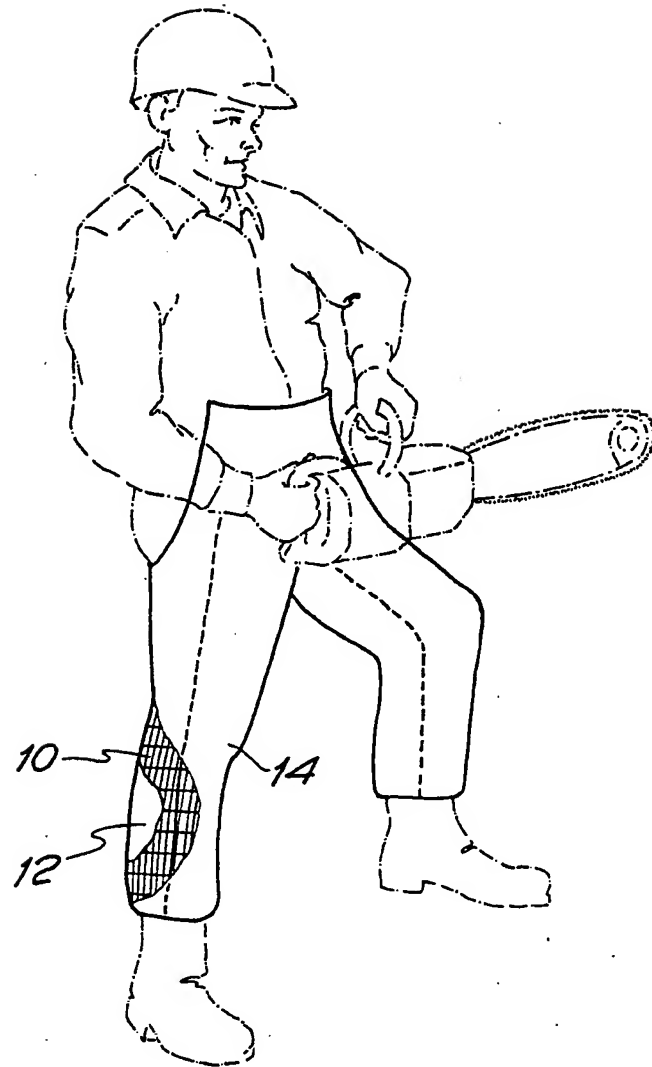


FIG.1.

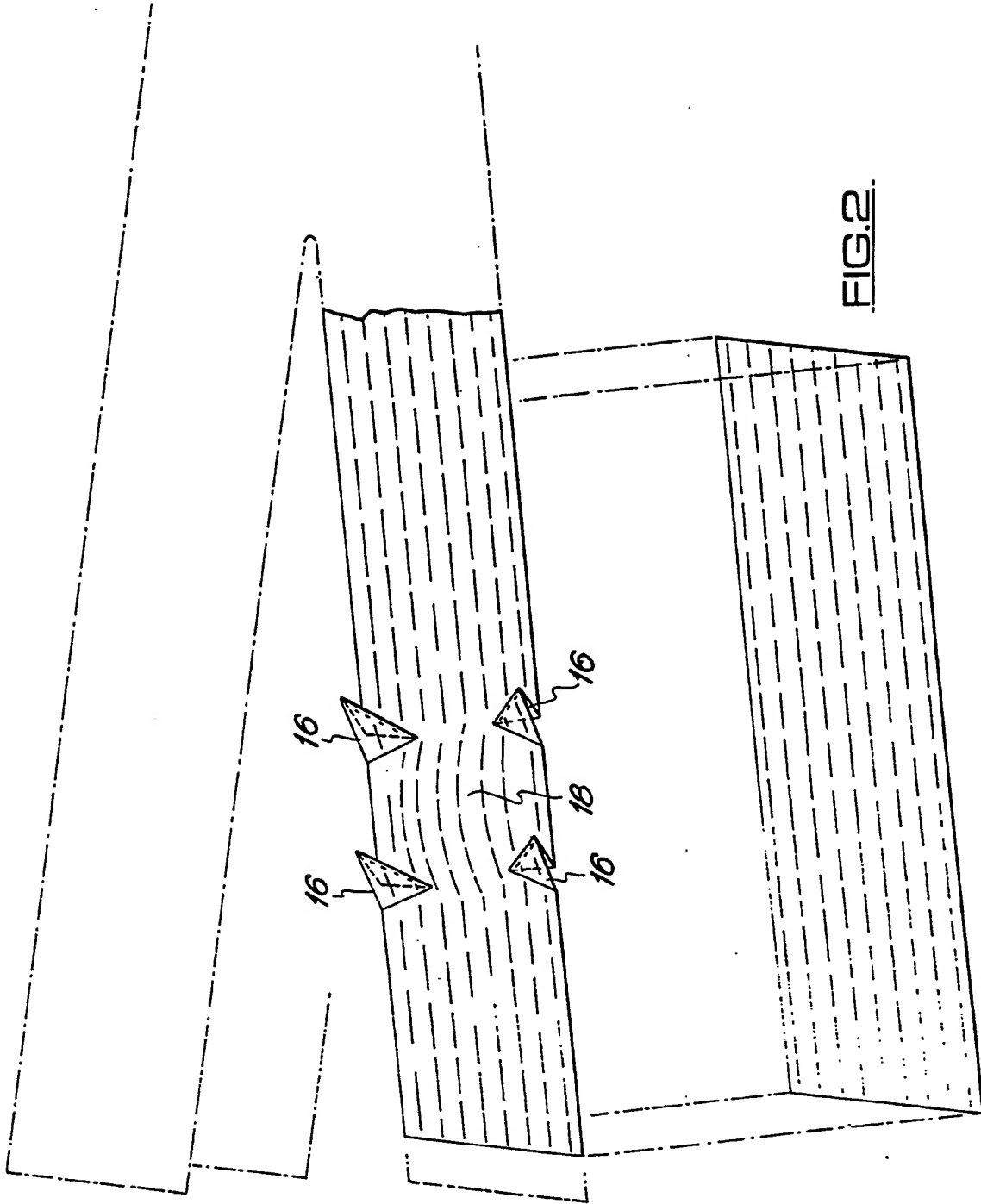


FIG. 2

Chain saw protective leggings, trousers and jackets.

The invention relates to chain saw protective leggings, trousers and jackets, in particular
5 though not exclusively to leggings and trousers for use by tree surgeons and forestry workers.

Chain saws are potentially highly dangerous items of equipment and users of such saws generally wear a full range of suitable protective clothing, that
10 is to say protective leggings, jackets and gaiters. It has now become the established practice to design such protective clothing in such a way that if it is cut through by the saw blades of a chain saw the latter is very quickly brought to a stop.
15 This is done by incorporating in the material of the item of protective clothing concerned a mass of fabric material designed to "strand" instantly when contacted by a moving chain saw blade, the stranded material being caused to wrap itself around the
20 spindle carrying the saw blade and resulting in the clogging and almost instantaneous stoppage of the chain saw. (The term "strand" is one which is well known to those skilled in the art and is used throughout this specification to denote the action
25 of drawing out elongate strands from a mass of

fabric material capable of being acted on in this way). The strandable fabric material is a high tenacity nylon knitted fabric.

Protective clothing of the kind just described
5 generally works very well in reducing the risk of serious injury should an accident occur. However, there is a particular difficulty in connection with leggings, trousers and jackets incorporating such strandable material, this being that because the
10 lengths of the strands must be as great as possible in order to be able to bring a chain saw quickly to a stop, the strandable material must be provided in a relatively long length of material, sometimes in a multiplicity of separate layers but sometimes
15 folded in a concertina-like fashion a number of times in order to obtain the relatively long lengths of material before being incorporated into the item of clothing concerned, and this makes the item of clothing somewhat bulky. Consequently, the
20 legs of a pair of chain saw protective leggings or trousers are difficult to flex at the knees and the sleeves of a chain saw protective jacket are difficult to flex at the elbows. This is a particular problem for tree surgeons, who need to
25 be able to climb trees or ladders continuously, because they find that the substantial pull at the

knee from the leg of a pair of leggings or trousers of the kind described results in great fatigue. It is, however, a problem for anyone wearing chain saw protective leggings, trousers and jackets since the continuous flexing of the knees when walking or the continuous bending of the arms when working can result in increased fatigue.

The object of the invention is to provide a construction of chain saw protective leggings, trousers and jackets which will at least alleviate the problem referred to.

According to one aspect of the invention, there is provided a method of making a pair of chain saw protective leggings or trousers, or a chain saw protective jacket, including a mass of fabric material designed to "strand" when contacted by a moving chain saw blade, the method including the step of stitching or of otherwise providing in a mass of chain saw clogging fabric material, before it is incorporated into the item of clothing, at what is to be the front of each leg portion or the outer part of each arm portion, as the case may be, at least one pair of oppositely disposed folds or darts to produce between them an area of fullness in the fabric material whilst retaining the continuity of the longitudinal strands of fabric

throughout the full width of the material to ensure that a chain saw cutting into the finished garment at any point will be quickly brought to a stop. The method may include the initial step of folding the layer or layers of chain saw clogging fabric material before the at least one pair of oppositely disposed folds or darts are provided in it, the folds preferably being made in concertina-like fashion in order to increase the effective length of the strands of fabric.

According to another aspect of the invention, there is provided a pair of chain saw protective leggings or trousers, or a chain saw protective jacket, including a mass of fabric material designed to "strand" when contacted by a moving chain saw blade, the legs of said leggings or trousers, or the arms of the jacket, as the case may be, having in the mass of fabric material at what is the front of each leg portion or the outer part of each arm, as the case may be, at least one pair of oppositely disposed folds or darts producing between them an area of fullness in the fabric material to facilitate the bending of the legs or arms of the item of clothing when in use, whilst retaining the continuity of the longitudinal strands of fabric throughout the full width of the

material to ensure that a chain saw cutting into the garment at any point will be quickly brought to a stop.

In order that the invention may be fully understood and readily carried into effect, the same will now be described, by way of example only, with reference to the accompanying drawings, of which:-

Figure 1 is a partly cut-away view of a pair of chain saw protective leggings embodying the invention, and

Figure 2 is a view of a mass of chain saw clogging fabric formed for use in making a pair of leggings as illustrated in Figure 1.

Referring now to Figure 1 of the drawings, the pair of chain saw protective leggings there illustrated are of composite construction and include a mass of chain saw clogging fabric 10 sandwiched between an inner lining material 12 and an outer layer of material 14 (which may or may not be a water repellant material). The mass of chain saw clogging fabric 10 is of a well known material designed to "strand" when contacted by a moving chain saw blade, the stranded material then wrapping itself around the spindle carrying the saw blade and resulting in the clogging and almost

instantaneous stoppage of the chain saw. So that the strands will be as long as possible to ensure that the length of any strand dragged out by a moving chain saw blade is almost certain to be long enough to completely clog the drive to the chain saw, a length of the fabric may have been folded a number of times to produce the mass of fabric 10. Such folding may have been carried out in concertina-like fashion. However, whether provided in a multiplicity of separate layers, or whether having been folded as described, the result is a mass of fabric material of substantial thickness.

In Figure 2, there is illustrated a further step in the method of making the item of clothing, this being the step of stitching, in the mass of fabric material, at what is to be the front of each leg portion and in the region of knee height, two spaced pairs of oppositely disposed folds or darts 16 to produce between them an area of fullness 18. In the illustrated embodiment, where each of the legs of the garment is to have a mass of chain saw clogging material at what is to be the rear of each leg in addition to that at the front of each leg, the lengths of the front pieces have initially been made several inches longer than the rear pieces, the effective overall length of each front piece

having been brought down to that of each rear piece, before having been united thereto by stitching down their side edges, by the step of stitching the pairs of folds or darts 16 referred to. The pairs of folds or darts have been turned down and stitched flat to adjacent portions of the front pieces to produce a neat mass of chain saw clogging material for sandwiching between the inner lining material 12 and the outer layer of material 14. In the drawing, for the sake of clarity of illustration, the areas of chain saw clogging fabric material have been shown to be of single thickness. In practice they will be of multi-layer thickness, possibly through having been folded in concertina-like fashion as previously described before the folds or darts 16 have been formed in the front of each leg part.

It has been found that the provision of the pairs of folds or darts 16 in the mass of fabric material at what is to be the front of each leg portion, producing the area of fullness referred to, has facilitated the bending of the legs of the item of clothing when in use. This is because the area of fullness has formed what can be regarded as a shallow pocket for the reception of the knee of the wearer. This has resulted in less fatigue by the

user when wearing the garment and particularly when he requires to frequently climb trees or ladders for example. However, the continuity of the longitudinal strands of fabric above and below the knee has been retained throughout the full width of the material so that the inherent safety of the garment when being worn by a person using a chain saw has not been impaired.

A pair of chain saw protective leggings or trousers embodying the invention are especially useful to a tree surgeon because of the fact that he is continually climbing trees or ladders, and the facility with which he can do so when wearing leggings or trousers as described will save him a great deal of fatigue. However, the invention will be of advantage to others requiring chain saw protective clothing, such as forestry workers.

The invention is also applicable to the manufacture of chain saw protective jackets because the need to flex the arms of such a jacket can be equally fatiguing. All that is required is the step of stitching or of otherwise providing in the mass of fabric material at what is to be the outer part of each arm portion in the elbow region, at least one pair of oppositely disposed folds or darts to produce between them an area of fullness

in the fabric material whilst again retaining the continuity of the longitudinal strands of fabric, above and below the elbow, throughout the full width of the material used at the outer part of each arm.

5 It is quite feasible that instead of being produced by stitching the folds or darts referred to could be produced by a stapling operation, by the use of a suitable adhesive, or by a welding or
10 fusing process. (Because it is to be sandwiched between inner and outer layers of material, the mass of chain saw clogging fabric material does not need to be of a particularly neat appearance and any convenient method of providing it with the
15 required folds or darts may be adopted). It may also be found that a single pair of oppositely disposed folds or darts are sufficient to give the required amount of fullness in the knee region or elbow region of the garment concerned. Various
20 other modifications may be made. For example, it will be understood that the mass of chain saw clogging fabric material could be provided only at the front of each leg of a pair of leggings or trousers or only at the outer part of each arm of a
25 jacket.

CLAIMS:

1. A method of making a pair of chain saw protective leggings or trousers, or a chain saw protective jacket, including a mass of fabric material designed to "strand" when contacted by a moving chain saw blade, the method including the step of stitching or of otherwise providing in a mass of chain saw clogging fabric material, before it is incorporated into the item of clothing, at what is to be the front of each leg portion or the outer part of each arm portion, as the case may be, at least one pair of oppositely disposed folds or darts to produce between them an area of fullness in the fabric material whilst retaining the continuity of the longitudinal strands of fabric throughout the full width of the material to ensure that a chain saw cutting into the finished garment at any point will be quickly brought to a stop.
2. The method according to claim 1, including the initial step of folding the layer or layers of chain saw clogging fabric material before the at least one pair of oppositely disposed folds or darts are provided in it.
3. The method according to claim 2, in which the folds are made in concertina-like fashion in

order to increase the effective length of the strands of fabric.

4. A pair of chain saw protective leggings or trousers, or a chain saw protective jacket, including a mass of fabric material designed to "strand" when contacted by a moving chain saw blade, the legs of said leggings or trousers, or the arms of the jacket, as the case may be, having in the mass of fabric material at what is the front of each leg portion or the outer part of each arm, as the case may be, at least one pair of oppositely disposed folds or darts producing between them an area of fullness in the fabric material to facilitate the bending of the legs or arms of the item of clothing when in use, whilst retaining the continuity of the longitudinal strands of fabric throughout the full width of the material to ensure that a chain saw cutting into the garment at any point will be quickly brought to a stop.

5. A method of making a pair of chain saw protective leggings or trousers, or a chain saw protective jacket, substantially as hereinbefore described.

6. A pair of chain saw protective leggings or trousers, or a chain saw protective jacket,

substantially as hereinbefore described with
reference to the accompanying drawings.